2020 Lobster Monitoring Update

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Robert Russell: Settlement Survey
Rebecca Peters: MENH Inshore Trawl Survey

GENERAL SEA SAMPLING RESULTS

In 2020, the Sea Sampling Program completed its 36th season. An unprecedented year due to the difficulties surrounding the global Covid-19 pandemic, sampling was limited: we completed 111 trips on 107 boats from 47 different ports. We measured 137,378 lobsters from 25,574 commercial lobster traps. These data provide biological information that inform management models for the ASMFC Lobster Stock Assessment.

The Sea Sampling Program is designed to cover 3 trips in each lobster management zone each month from May-November. During the winter months, we complete at least one trip per statistical area every month but finding winter trips is challenging due to weather as well as vessel and personnel availability. Due to safety protocols surrounding the pandemic, we were only able to complete all planned trips in Jan, Feb, Jul, Aug, Sep, and Oct. **As such, results below include only data from Jul – Oct for all years.**

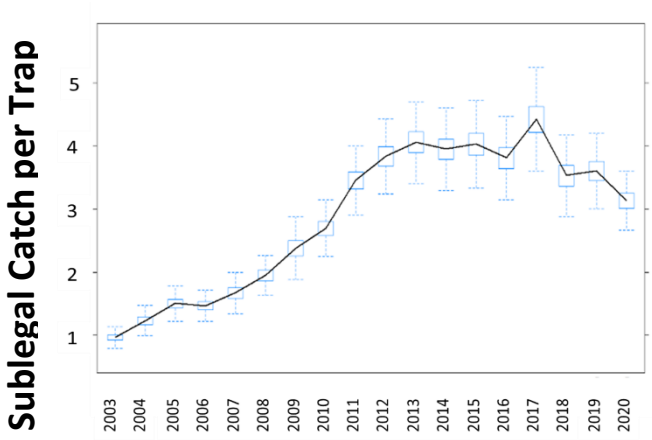


Figure 1 (above). Sublegal catch per trap (total # lobsters/total traps measured) for 2003-2020.

- In 2020, sublegal lobsters continued to decline from 2017 levels. However, numbers remain higher than pre-2010.

SHELL DISEASE

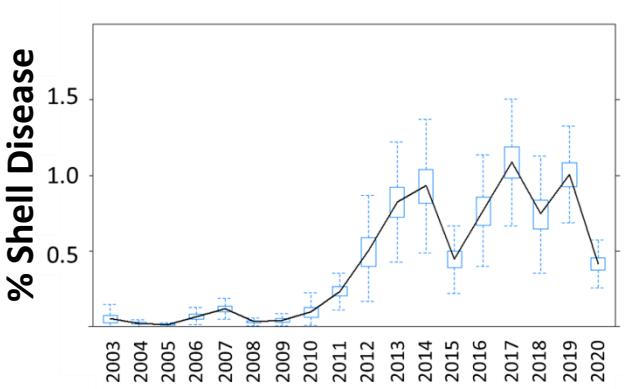
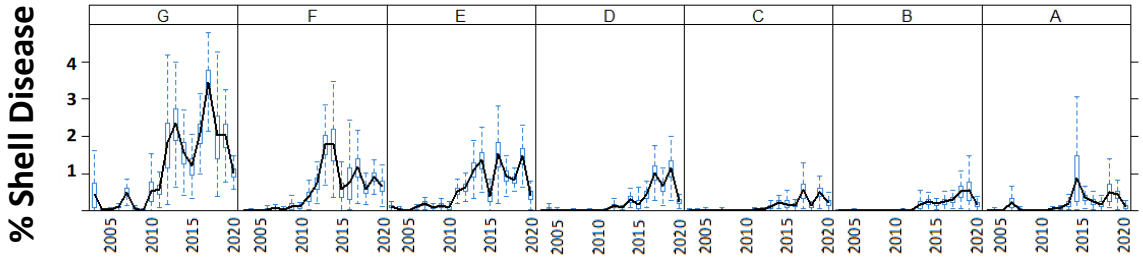


Figure 2. Shell disease prevalence (% of all lobsters measured) by year (Jul-Oct) for all zones combined (2003-2020).

- Overall, proportion of shell disease remains low (<2%) compared with Southern New England rates (20-30%).
- Annual prevelance of observed shell disease in 2020 was the lowest it's been since 2015.
- Shell disease continues to be observed primarily on eggbearing females of all sizes and oversized lobsters. This pattern is consistent with the general observation that most diseased lobsters have older shells.
- Historically, the months of May and June observe some of the highest rate of shell disease in Maine. The data presented here are not comparable to data from previous monitoring update reports, as May and June were excluded.

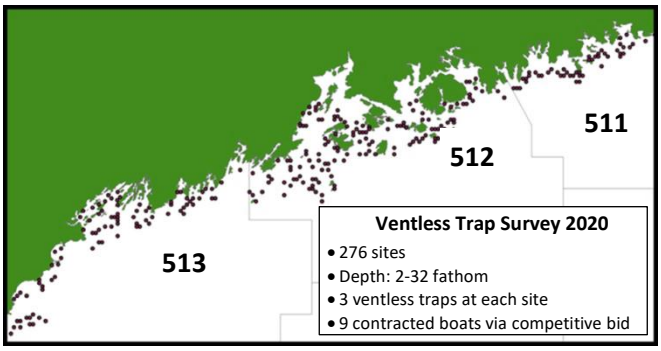
Figure 3 (below). Shell disease prevalence (percent of all lobsters measured by trip) by year (Jul-Oct, 2003-2020) and zone.

- Shell disease continues to be more common in western zones (D-G), whereas prevalence remained low in eastern ME (zones A-C).
- All zones saw a decrease from 2019.



For more information, please visit us at www.maine.gov/dmr/science-research/species/lobster/
For questions related to survey participation and results, contact Kathleen Reardon at Kathleen.Reardon@Maine.gov

VENTLESS TRAP SURVEY



The Ventless Trap Survey deploys traps with 1" mesh and no vents in order to monitor sublegal lobsters as an indicator of the future abundance of legal lobsters. Sites are randomly selected and stratified by depth and statistical area.

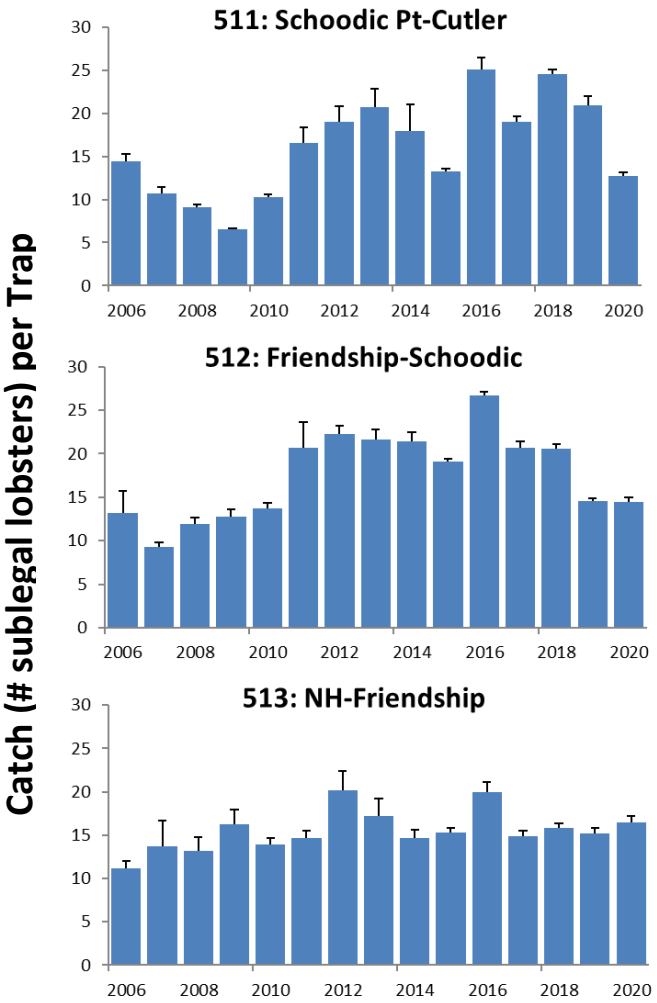


Figure 4. Mean sublegal catch per trap stratified by depth by statistical area for 2006-2020 from the Ventless Trap Survey.

- 2020 Sublegal catch observed significant declines in eastern Maine; however, levels in midcoast and western Maine observed similar catch to that of 2019.
- In recent years, catch-per-trap of sublegals has been on a declining trend in eastern and midcoast Maine, whereas western Maine appears more stable.

SETTLEMENT SURVEY

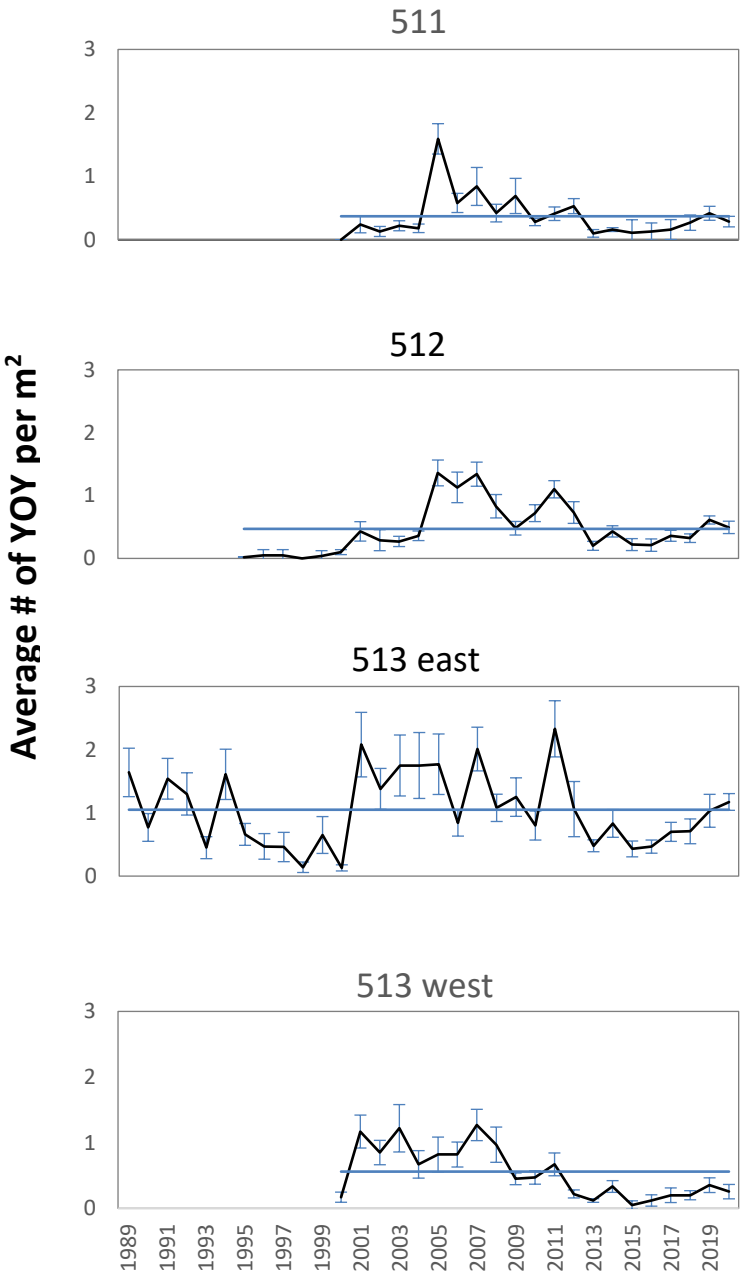
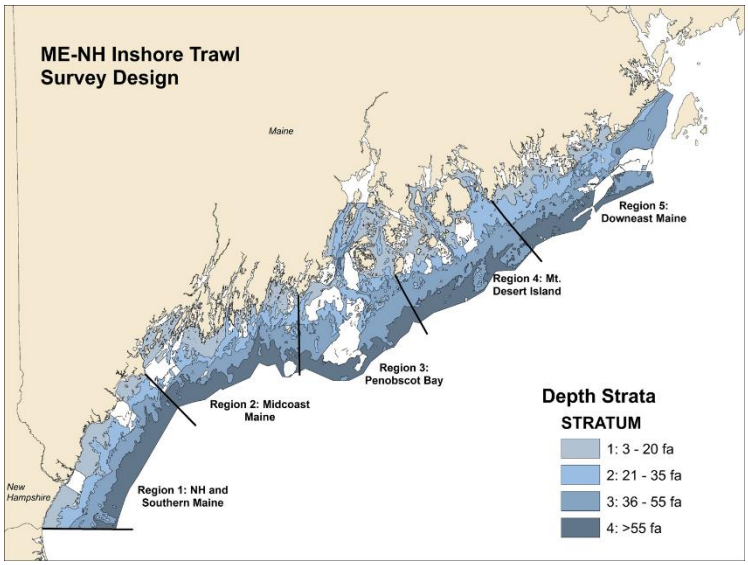


Figure 5. Settlement Survey Indices (black line) by statistical area (1989-2020) with time series median (blue line).

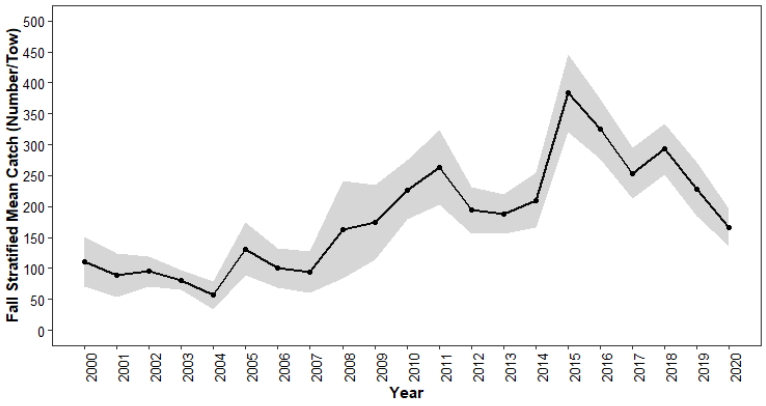
- The settlement index is derived from a SCUBA diving survey which uses suction sampling methods to collect newly settled young-of-year (YOY) lobsters (average # YOY/m^2) in cobble habitat < 5 fathom depth.
- All regions observed decrease in YOY lobsters except for 513 East which saw increase.
- The Settlement Survey does not account for changes in suitable habitat for lobster settlement, which could be occurring in deeper water.

MENH Inshore Trawl Survey



The Maine-New Hampshire Inshore Trawl Survey is a resource assessment survey performed along the coastal waters of Maine and New Hampshire. Bi-annual surveys, spring and fall, have been conducted since the fall of 2000. This survey is a collaborative research project using a commercial fishing vessel as the platform.

Due to the safety concerns and uncertainty surrounding the global Covid-19 pandemic, the Inshore Trawl Survey was only performed in the fall of 2020. Sampling was performed from September 21st through October 23rd.



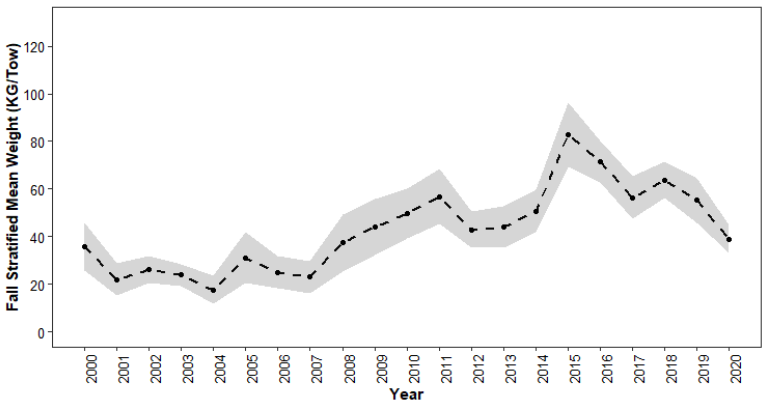


Figure 6 (bottom left). Fall 2020 stratified mean catch of lobsters per tow (top) and stratified mean weight of lobsters in kilograms per tow (bottom).

- Since the inception of the survey, analysis of fall trawl survey data shows peaks in in 2011, 2015 and 2018.
- Survey data shows a declining trend in mean catch- and weight-per-tow following the timespan's peak in 2015.

2020 SURVEYS SUMMARY

- Complications surrounding the global pandemic limited the Lobster at-Sea Sampling program to completing only two months of winter sampling and four months of summer sampling. The MENH Inshore Trawl Survey was also limited to only performing operations in the fall.

- Despite these complications, the Ventless Trap Survey, Settlement Survey, and Fall Inshore Trawl Survey were executed as normal.

- Despite the observed declines in DMR-surveyed lobsters-per-trap, sublegal catch remains above 2010 numbers.

- Results from the 2020 Ventless Trap Survey displayed an overall decline in sublegal catch, particularly in eastern Maine.

- The Settlement Survey saw mixed results in 2020, with observed declines in most areas of the state, but an increase in one sub-section of southern Maine.

- The Fall MENH Inshore Trawl Survey observed declines in lobster-per-tow. Mean catch-per-tow in 2020 reflected that seen in 2009 and 2013.

- From 2020 survey results, lobster abundance appears to be on a declining trend. However, the sampling limitations placed on several of these programs led to incomplete coverage. Field operations in the coming year will help to form a more complete analysis of the trends observed here.

- Some of these surveys do not currently account for changes in suitable habitat for lobster settlement, which could be occurring in deeper water. Future expansion of these surveys may provide insights into potential shifting habitat use by lobsters.